

Alg 2A Review - KEY

$$\begin{aligned} 1) & 3x - 5 - (2x + 4) \\ &= 3x - 5 - 2x - 4 \\ &= \boxed{x - 9} \end{aligned}$$

$$\begin{aligned} 2) & 7x^2 + 3x + 8 - (3x^2 + 5x - 3) \\ &= 7x^2 + 3x + 8 - 3x^2 - 5x + 3 \\ &= \boxed{4x^2 - 2x + 11} \end{aligned}$$

$$\begin{aligned} 3) & \quad + 3x^2 + 5x = 8x^2 - 11x \\ & \boxed{5x^2 - 16x} \end{aligned}$$

$$\begin{aligned} 4) & 4(c + 2b) - 3(2c + b) \\ &= 4c + 8b - 6c - 3b \\ &= \boxed{-2c + 5b} \end{aligned}$$

$$\begin{aligned} 5) & (x - 4y) - 3(-x + y) + 4(3x - 4y) \\ &= x - 4y + 3x - 3y + 12x - 16y \\ &= \boxed{16x - 23y} \end{aligned}$$

$$\begin{aligned} 6) & P(x) = R(x) - C(x) \\ &= 30x - (10x + 215) \\ &= 30x - 10x - 215 \\ &= \boxed{20x - 215} \end{aligned}$$

$$\begin{aligned} 7) & \frac{-(-3) + \sqrt{(-3)^2 - 4(5)(-2)}}{2(5)} \\ &= \frac{3 + \sqrt{9 + 40}}{10} = \frac{3 + \sqrt{49}}{10} = \frac{3 + 7}{10} = \frac{10}{10} = \boxed{1} \end{aligned}$$

$$\begin{aligned} 8) & \frac{-(-5) + \sqrt{(-5)^2 - 4(3)(-8)}}{2(3)} = \frac{5 + \sqrt{25 + 96}}{6} = \frac{5 + \sqrt{121}}{6} = \frac{5 + 11}{6} = \frac{16}{6} = \frac{8}{3} = \boxed{2.\bar{6}} \end{aligned}$$

$$9) R \cdot I = \frac{V}{R} \cdot R$$

$$\frac{R \cdot I}{I} = \frac{V}{I}$$

$$\boxed{R = \frac{V}{I}}$$

$$10) \begin{array}{r} 3x^2 + 7 = y \\ -7 \quad -7 \end{array}$$

$$\frac{3x^2}{3} = \frac{y-7}{3}$$

$$\sqrt{x^2} = \sqrt{\frac{y-7}{3}}$$

$$\boxed{x = \sqrt{\frac{y-7}{3}}}$$

$$11) \frac{PE}{mh} = \frac{Mgh}{mh}$$

$$\boxed{\frac{PE}{mh} = g}$$

$$12) \begin{array}{r} 2L + 2W = P \\ -2L \quad -2L \\ \hline \end{array}$$

$$\frac{2W}{2} = \frac{P-2L}{2}$$

$$\boxed{W = \frac{P-2L}{2} = \frac{P}{2} - L}$$

$$14) \frac{2(x)}{2(7)} + \frac{7(x+3)}{7(2)}$$

$$\frac{2x}{14} + \frac{7x+21}{14} = \boxed{\frac{9x+21}{14}}$$

$$13) \sqrt[5]{23^2} = \boxed{23^{\frac{2}{5}}}$$

$$15) \left(\sqrt[3]{x+4} \right)^3 = (5)^3$$

$$\begin{array}{r} x+4 = 125 \\ -4 \quad -4 \\ \hline \end{array}$$

$$\boxed{x = 121}$$

$$16) \begin{array}{r} x^4 - 6 = 10 \\ +6 \quad +6 \\ \hline \end{array}$$

$$\sqrt[4]{x^4} = \sqrt[4]{16}$$

$$\boxed{x = \pm 2}$$

$$17) \begin{array}{r} 16 = -8(y+3) \\ -8 \quad -8 \\ \hline \end{array} \quad \text{or} \quad 16 = -8(y+3)$$

$$\begin{array}{r} -2 = y+3 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\boxed{-5 = y}$$

$$\begin{array}{r} 16 = -8y - 24 \\ +24 \quad +24 \\ \hline \end{array}$$

$$\begin{array}{r} 40 = -8y \\ -8 \quad -8 \\ \hline \end{array}$$

$$\boxed{y = -5}$$

$$18) 2(x+7) = 3x-5$$

$$\begin{array}{r} 2x+14 = 3x-5 \\ -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} 14 = x-5 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\boxed{19 = x}$$

$$19) (a+b)(a^2+3b)$$

$$= a^3 + 3ab + a^2b + 3b^2$$

	a	b
a ²	a ³	a ² b
3b	3ab	3b ²

20) A. No B. Yes C. Yes D. No

$$21) f(x+3) = 12(x+3) - 5$$

$$= 12x + 36 - 5$$

$$= \boxed{12x + 31}$$

$$22) f(-2) = 3(-2)^2 + 6(-2) - 10$$

$$= 3(4) - 12 - 10$$

$$= 12 - 12 - 10$$

$$= \boxed{-10}$$

$$23) A. (-\infty, 9) \quad B. [-2, \infty) \quad C. (3, \infty)$$

$$24) f(-1) = \frac{(-1)^2 - 5(-1) + 4}{-1 - 2} = \frac{1 + 5 + 4}{-3} = \boxed{\frac{10}{-3} = -3.\bar{3}}$$

$$25) A. D: [-7, 3] \quad B. \text{The point } (3, 5) \text{ is on the graph} \quad C. f(-5) = 3$$

$$R: [0, 5] \quad \text{so } \boxed{f(3) = 5}$$

$$26) f(2) = 4 \quad (\text{Since the point } (4, 2) \text{ is on the } f \text{ graph})$$

$$g(1) = 4 \quad (\text{Since the point } (4, 1) \text{ is on the } g \text{ graph})$$

$$27) A. D: (-\infty, \infty) \text{ or } \mathbb{R} \text{ or All real numbers} \quad R: [-4, \infty)$$

$$B. D: \{-4, 1, 2, 6\} \quad R: \{-1, 8, 9, 14\}$$

$$C. D: [-2, \infty) \quad R: (-\infty, \infty) \text{ or } \mathbb{R} \text{ or All real numbers}$$

$$28) C \quad (\text{It's a square root function})$$

$$29) A. y = x \nearrow \quad B. y = |x| \vee \quad C. y = x^2 \cup \quad D. y = x^3 \curvearrowright$$

$$E. y = \sqrt{x} \nwarrow \quad F. y = \frac{1}{x} \swarrow \quad G. y = e^x \nearrow \quad H. y = \ln x \nwarrow$$

$$I. y = \sin x \sim$$

30) A. $y = 3\sqrt{-(x+2)} - 1$

vertical stretch
reflect over y-axis
shift left 2
shift down 1

B. $y = -\frac{1}{2}(x+6)^2 + 3$

reflect over x-axis
vertical shrink
shift left 6
shift up 3

C. $y = \sin(4x) + 2$ → shift up 2
horizontal shrink

31) C (It shifts left, not right)

32) A. $(f+g)(x) = 6x - 3 + 2x^2 - 5x + 9 = \boxed{2x^2 + x + 6}$

B. $(f-g)(x) = 6x - 3 - (2x^2 - 5x + 9)$
 $= 6x - 3 - 2x^2 + 5x - 9 = \boxed{-2x^2 + 11x - 12}$

C. $(h \cdot g)(x) = 5x(2x^2 - 5x + 9) = \boxed{10x^3 - 25x^2 + 45x}$

D. $\left(\frac{g}{f}\right)(x) = \frac{2x^2 - 5x + 9}{6x - 3}$

E. $2f(x) - 5 = 2(6x - 3) - 5$
 $= 12x - 6 - 5 = \boxed{12x - 11}$

33) A. $h(f(x)) = 3(9x - 4) = \boxed{27x - 12}$

B. $f(h(x)) = 9(3x) - 4 = \boxed{27x - 4}$

C. $f[h(-4)]$ $h(-4) = 3(-4) = -12$
 $= f(-12) = 9(-12) - 4$
 $= -108 - 4 = \boxed{-112}$

$$34) y = \frac{1}{4}x - \frac{3}{4}$$

$$x = \frac{1}{4}y - \frac{3}{4}$$

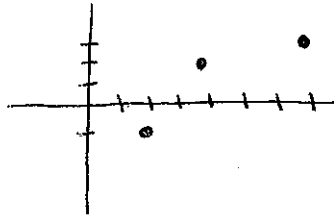
$$+\frac{3}{4} \quad +\frac{3}{4}$$

$$4\left(x + \frac{3}{4}\right) = \frac{1}{4}y$$

$$4x + 3 = y$$

$$\boxed{y^{-1} = 4x + 3}$$

$$35) \text{ Inverse is } f^{-1} = \{(4, 2), (2, -1), (7, 3)\}$$



$$36) y = 3x + 6$$

$$x = \frac{y + 6}{3}$$

$$\frac{x - 6}{3} = \frac{y}{3}$$

$$\frac{x - 6}{3} = y$$

$$\boxed{f^{-1}(x) = \frac{x - 6}{3} = \frac{1}{3}x - 2}$$

$$37) y + 6 = 5x$$

$$\frac{x + 6}{5} = \frac{5y}{5}$$

$$\boxed{y^{-1} = \frac{x + 6}{5} = \frac{1}{5}x + \frac{6}{5}}$$

$$38) \text{ A. yes } \quad \text{B. No (see \#36)}$$

$$39) \text{ C}$$

- 40) A. Go at a constant speed and then speed up/accelerate
 B. Travel away from home at a constant speed and then slow down
 C. Travel away at a constant speed and then a faster constant speed

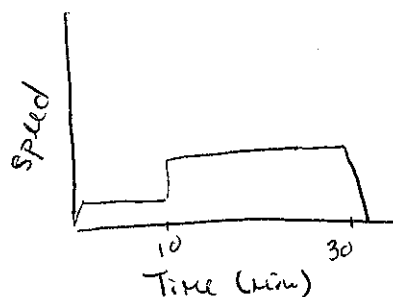
$$41) \text{ A. BC, DE, FG } \quad \text{B. AB, CD, GH } \quad \text{C. EF}$$

$$\text{D. DE } \quad \text{E. only at A}$$

42)



43)

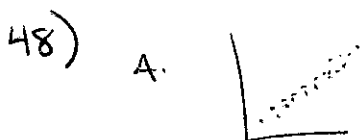


44) $s = 85 \text{ mph}$ $t = 1 \text{ hr } 20 \text{ min}$ $d = ?$ $d = s \cdot t$
 $= 1 + \frac{20}{60} = 1.\bar{3} \text{ hrs}$ $= 85(1.\bar{3}) = \boxed{113.3 \text{ miles}}$

45) $t = 1 \text{ hr } 45 \text{ min}$ $d = 120 \text{ miles}$ $s = ?$ $s = \frac{d}{t} = \frac{120}{1.75} = \boxed{68.57 \text{ mph}}$
 $= 1.75 \text{ hrs}$

46) $d = 42 \text{ miles}$ $s = 55 \text{ mph}$ $t = ?$ $t = \frac{d}{s} = \frac{42}{55} = .76 \text{ hrs}$
 $\times 60 \approx \boxed{46 \text{ minutes}}$

- 47) A. $(-1, -3)$ and $(4, -1)$ B. $(-3, 2)$ and $(2, 1)$
 C. $(-4, 2, 0)$, $(-2, 0)$, $(1, 0)$, $(2, 0)$, $(4, 6, 0)$ D. $(0, -2)$
 E. $(-\infty, -3)$, $(-1, 2)$, $(4, \infty)$
 $x < -3$ $-1 < x < 2$ $x > 4$
 F. $(-3, -1)$, $(2, 4)$
 $-3 < x < 1$ $2 < x < 4$



49) 6



51) $(-3, 0)$
 $-3 < x < 0$

(This is where the parabola, $g(x)$, is higher than the line, $f(x)$)

